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5. (*amended*) A [nucleic acid] nucleotide sequence encoding a mutant polypeptide according to claim 4.

6. (*amended*) A [nucleic acid] nucleotide sequence according to claim [4] 5 which comprises the nucleotide sequence SEQ ID NO:2.

7. (*amended*) A vector comprising a promoter operably linked to a nucleic acid sequence according to claim 5 [6], capable of directing the expression of a mutant human β -globin polypeptide.

14. (*amended*) A modified human hemoglobin according to [any of claims 10-13] claim 10 or 13 comprising a mutant human α -globin polypeptide comprising the amino acid sequence of normal human α -globin modified by the substitution or deletion of Cys at position 104.

15. (*amended*) A modified human hemoglobin according to claim 14 [13 comprising a] wherein the mutant human α -globin polypeptide [comprising the amino acid sequence of normal human α -globin modified by the substitution or deletion of Cys at position 104, and] is further modified by either the substitution of Cys for Ala at position 71, or the substitution of Cys for Ala at position 53.

17. (*amended*) A polymeric hemoglobin comprising a modified human hemoglobin according to claim 10, [11, 12,] 13 or 16, wherein adjacent hemoglobins are covalently bonded to each other by one or more disulfide bridges formed by cysteine amino acid residues.

24. (*amended*) A mutant human α -globin polypeptide [comprising the amino acid sequence of normal human α -globin modified by the substitution or deletion of Cys at

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position 104, and] according to claim 23, further modified by either the substitution of Cys for Ala at position 71, or the substitution of Cys for Ala at position 53.